National Institute of Environmental Health Sciences

Urban heat island intensity in London: An investigation of the impact of physical characteristics on changes in outdoor air temperature during summer

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Year: 2008
Journal: Solar Energy. 82 (11): 986-998

Abstract:

The study looks at the potential of physical characteristics in mitigating the urban heat island intensity (UHI) in London during summer. This research uses six on-site variables namely aspect ratio, surface albedo, plan density ratio, green density ratio, fabric density ratio and thermal mass for the investigation in six data sets. The climatic variations in summer are controlled by classifying the data into clear sky, partially cloudy and cloudy periods. Geographical variation is controlled by classifying the data into core, urban and semi urban areas. Maximum daytime UHI of 8.9 °C is found in semi-urban area during partially cloudy period while maximum nocturnal UHI of 8.6 °C is found in urban area during clear sky period when the wind velocity is below 5 m/s. The most critical climate and geographical location in determining the changes in outdoor air temperature in London are partially cloudy periods and urban areas respectively. Among the variables studied, most critical variable that determines the daytime and nocturnal changes in outdoor air temperature is surface albedo.

Source: http://dx.doi.org/10.1016/j.solener.2008.05.004

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : England

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified